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### **34. AN OVERVIEW OF THE CZECH NBC EQUIPMENT**

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#### **INTRODUCTION**

The Czech Republic is not an owner of mass destruction weapons (NBC weapons). On the other hand the Czech Republic (and the former Czechoslovakia) paid a high level attention to research and development of the equipment for monitoring, protection and decontamination of chemical warfare agents, biological warfare agents and radioactive agents. The Czech Republic (and the former Czechoslovakia) worked very intensive on the research and development of the protective means against NBC contaminants and it achieved good results in these areas. The protection means, means for detection and monitoring and for decontamination of the chemical warfare agents proved good during the Gulf War in 1990 – 1991.

### **AN OVERVIEW OF THE CZECH NBC EQUIPMENT**

#### **INDIVIDUAL PROTECTIVE EQUIPMENT**

Protective Masks M-10, M-10M, M-90

Protective Mask for Specialists PRV-U

Protective Masks for Head Injuries SR-2

Breathing Apparatus PPS-500

Field Gas Chamber PZK-M-10

Protective Sets JP-75A, JP-90

Autoinjector Combopen with Antidote

Autoinjector Combopen with Diazepam

Individual Decontamination Kit IPB-80

Portable Water Tablets – Dikacid

First Aid Bandage M-90

Antimicrobial First Aid Bandage M-90

Chemical Protective Suits OPCH-70, OPCH-90

Permeable Protective Oversuits FOP-85, FOP-96

#### **Collective Protective Equipment**

Filter FMP-180M

Collective Filters KFM-2000, KF-1000M

Filtration Systems FVZ-100, FVZ-150

#### **NBC Reconnaissance Equipment**

Detection Papers PP-1, PP-3

Nerve Agent Detector DETEHIT

Detegas-1

Chemical Detection Kit CHP-71 (with Test Tubes)

Nerve Agents Detector BioNA

Automatic Detection Kits GSP-11, GSA-12

Chemical Detector RAID-1

Automatic Alarm GO-27  
Dose-rate Meter IT-65, DP-3b, DP-86, DP-98, RDS-120  
Automatic Alarm AS-67  
Aerial Dose-rate Meter RL-75  
Radiometer RBGT-62  
NBC Reconnaissance Set SRCHP-75  
NBC Reconnaissance Vehicle UAZ-469CH, Land Rover CH  
NBC Reconnaissance Armored Vehicle BRDM-2rch  
Sampling Kit SOV-99A  
Sample Transport Kit STV-99  
Mobile NBC Collection Center PRS-79A

**Radiological Control Equipment**

Reader of Dosimeters VDD-80  
Personal Dosimeter RAD-50S  
Group Dosimeter EDOS

**Laboratory Equipment**

Portable Chemical Laboratory PCHL-90  
Spectrometer EM-640  
Radiological laboratory RAM-II  
Mobile Chemical Laboratory AL-1  
Mobile Laboratory Sonda

**Decontamination Equipment**

Universal Decontamination Set UOS-1M  
Personnel Decontamination Set SDO  
Decontamination Kit OS-3  
Vehicle Decontamination Kits AOS-1, AOS-2  
Decontamination Vehicle ARS-12M, ACHR-90, ST T-815  
Decontamination System LINKA-82, TZ-74

The article does not encompass smoke equipment, repair equipment, consumable items, special trainers and simulators. It is not possible to give basic information of designation, properties, main technical data about above mentioned and listed items. The reason is simple there is a limited space for publishing.

**SEVERAL EXAMPLES FROM THE CZECH NBC EQUIPMENT**

There are only several short examples:

**Protective Mask M-90**

Protective mask M-90 is a full face mask equipped with a head harness with a head net and a plastic protective filter. Equipment which provides a protection to the eyes, respiratory tract and face against chemical and biological agents in gaseous or aerosol form and radioactive aerosols. The face piece is made from bromobutyl rubber ensuring an high resistance against toxic agents. The filter can be left or right mounted.

### **Chemical Protective Suit OPCH-90**

Chemical protective suit for a reliable and long-term protection of persons against toxic agents, bacteriological means and radioactive aerosols. The chemical suit is equipped with a filter-ventilation unit carried on the back and supplying 60 l.min<sup>-1</sup> of air into the mask and 240 l.min<sup>-1</sup> under the suit. The used material has self-extinguishing properties in case of a direct contact with flame or light impulse. It can be used for both military purposes and civil protection (nuclear and chemical accidents and disasters, etc.) Resistance time for gases and vapors: 7 hours, resistance time for mustard gas drops: 4 hours, for lewisite drops 2 hours, resistance time for soman and VX agent drops: 7 hours.

### **Chemical Detection Kit CHP-71**

Chemical Detector Kit is compact, simple-to-use kit designated to detect blister, nerve, blood and choking agents. The kit enables simultaneous detection of all four classes of agents using the electrical pump with the test tubes in air, on surfaces and soil, detection of individual class of agents using the electrical pump. Principle of detection is based on chemical reactions running in the test tubes. One man operated.

### **Nerve Agent Detection Strip DETEHIT**

Detection of nerve agents and organophosphate insecticides in air, water, extracts and on surfaces. Presence of agents is indicated when a detection zone colour remains white after a test. The plastic strip contains a white cotton cloth reaction zone with immobilized cholinesterase, paper zone with chromogene substrate and yellow cotton cloth as the colour standard.

### **Mobile Chemical Laboratory**

Mobile Chemical Laboratory is designated for the following in-situ applications and namely monitoring of:

- Dangerous chemical agents leakage;
- Chemical agent quantities in the environment;
- Time change of chemical agent concentrations in the environment;
- Degree of the environment and protective equipment decontamination;
- Hazardous pollutant emissions and imissions;
- Observing the terms of the Chemical Weapons Convention;
- Testing of the premises and equipment sealing.

It is used especially for monitoring volatile organic compounds, but solid agents as well as liquids like drugs, amino acids and toxic industrial substances can also be analysed.

Mobile Laboratory is an equipment built on the Ford Transit 2,5 D chassis. The interior of the vehicle is so designated to enable working both inside the vehicle (especially under winter conditions when the instruments require optimum tempering) and outside the vehicle. The vehicle can be supplied from the external power source but it is also equipped with its own power source so the vehicle can be used also in the places without voltage sources.

The basic instruments of the Mobile Laboratory are:

- BRUKER EM 640 or 640S mass spectrometer;
- BRUCKER VECTOR 22 FT - IR spectrometer;
- Infrared microscope IRSCOPE II;
- SCENTOGRAPH Plus II portable chromatograph;
- RAID - S automatic warning equipment for chemical agent detection;
- ANAGAS gas analyser with exchangeable detectors;

- TRIPLE Plus portable gas detector;
- GX portable power station;
- Other simple devices for chemical agent detection.

### **Decontamination Kit OS-3**

The Decontamination Kit OS-3 is intended for decontamination of mobile military equipment (tanks, armored personnel carrier, vehicles) by spraying decontaminants. Two variants of the basic kit are available: OS-3 (24 V) for nominal voltage DC 24 V in vehicle electric network, OS-3 (12 V) for nominal voltage DC 12 V in vehicle electric network.

The kits differ only in used electric motor of a spray gun and a cable length. All components and elements are identical and interchangeable.

Decontamination kit is universal, it can treat any surface with spraying all usually applied decontaminants (inclusively DS-2, hypochlorite solutions etc.). The utilization of any reservoir (for decontaminant to be used) is not excluded. It gives a possibility to decontaminate both the biological and the known chemical warfare agents or their precursors being present on surfaces of isolation type individual protection equipment and devices working in the contaminated area.

It facilitates the post-treatment of persons or devices by using detergent water solutions and it gives a possibility to apply cold water on surfaces, thus the persons being protected by impermeable clothes in very hot desert conditions can be cooled.

### **Decontamination Solution OR-3**

Decontamination solution OR-3 is a 2-components alcoholate-amine decontamination agent as a solution, and is used primarily for the decontamination of personal weapons, military technique and protective clothing, which have been contaminated by liquid warfare agents such as blister - or nerve agents. It is usually applied being sprayed by a spray gun of the decontamination kit OS-3.

### **CONCLUSION**

To say in a time of worldwide political and military detension that a real threat caused by NBC weapons (weapons of mass destruction) still exists, which consequently requires the necessary measures in the civil and military sectors, including reliable and sufficient NBC equipment.

Moreover, it must be stress that the teoretical and practical basis for production, storage and employment of these weapons still exists. Besides, the consequences of the accidents in the chemical and related industries and nuclear power plants or affecting the infrastructure can have effects comparable to those resulting from an attack with mass destruction weapons. And finally we must consider the increasing possibility of nuclear, biological and chemical terrorism.

High quality of the equipment for protection, monitoring and decontamination of the chemical warfare agents, toxic industrial substances, biological warfare agents, radioactive agents must be used to provide with a high quality of defense and protection for persons, personnel, devices, materials, terrain, etc.

### **SUMMARY**

A short introduction of the long tradition on the area of NBC equipment in the country. An overview (a list) of the Czech NBC equipment in several branches (protection, detection and monitoring, decontamination, etc.). A few examples of the reliable and

significant NBC equipment which can be used for both military purposes and civil protection.

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#### KEYWORDS

Individual Protective Equipment, Collective Protective Equipment, NBC Reconnaissance Equipment, Radiological Control Equipment, Laboratory Equipment, Decontamination Equipment